

**Serial No. 09/385,584**

**IN THE DRAWINGS:**

The attached drawings replace the original sheets previously filed including FIGS. 1-9.

## REMARKS

The Office Action of September 21, 2006, has been received and reviewed.

Claims 33-37, and 41-56 are currently pending and under consideration in the above-referenced application. Each of claims 33-37, and 41-56 stands rejected.

Reconsideration of the above-referenced application is respectfully requested.

### Rejections under 35 U.S.C. § 102

Claims 33-37, and 41-56 stand rejected under 35 U.S.C. § 102(b) for reciting subject matter which is purportedly anticipated by that described in U.S. Patent 5,674,595 to Busacco et al. (hereinafter “Busacco”).

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single reference which qualifies as prior art under 35 U.S.C. § 102. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Busacco describes a flexible circuit board 10 with a overlay 12 that electrically insulates conductors on circuit board. Busacco, FIG. 1; Abstract. The overlay 12 is a solid film of a dielectric material bonded to the substrate 14. *Id.*, col. 2, lines 40-42. Apertures 28 that are relatively large are formed through the overlay 12 so as to facilitate the positioning of the overlay 12 over a substrate 14 with contact bumps 18 protruding therefrom. *Id.*, FIG. 2; col. 3, lines 38-40 and 46-48.

Independent claim 33 is directed to a pre-formed solder mask. The mask of claim 33 includes a film of mask material made of a polymer and with a substantially uniform thickness. At least one open aperture is formed through the film and is located in the film corresponding to the location of a contact pad in a substrate upon which the mask is to be disposed. The aperture includes a surface configured to maintain contact with and form a peripheral shape of a conductive structure to be formed on the connect pad.

Busacco does not describe, either expressly or inherently, at least one aperture configured to maintain contact with or form a conductive structure. Rather, apertures 28 formed through the

overlay 12 of Busacco are configured to circumvent contact bumps 18 plated on the substrate 14. Thus, the diameters of the apertures 28 must be large enough to fit around the protruding contact bumps 18. Because the diameter of each aperture 28 is larger than those of the contact bumps 18 that the apertures 28 are supposed to accommodate, the apertures 28 do not maintain contact with the contact bumps 18, nor are they suitable for forming conductive structures on the substrate 14. Moreover, as the contact bumps 18 of Busacco are plated on the substrate 14 before the overlay 12 is disposed thereon, the apertures 28 do not define the peripheral shapes of the contact bumps 18. Therefore, Busacco does not anticipate each and every element of independent claim 33.

It is, accordingly, respectfully submitted that, under 35 U.S.C. § 102(b), independent claim 33 recites subject matter which is allowable over that described in Busacco.

Each of claims 34-42 is allowable, among other reasons, for depending directly from claim 33, which is allowable.

Claim 34 is further allowable as Busacco does not expressly or inherently describe apertures positioned to expose a non-peripheral region of the contact pad. In contrast, the apertures 28 described by Busacco are positioned to surround contact bumps 18 plated to contact pads on the substrate 14. Because the contact bumps 18 of Busacco cover the contact pads, the contact pads cannot be exposed through the apertures 28.

Independent claim 43 is also directed to a pre-formed solder mask. The mask of claim 43 includes a film of solder mask material including a polymer. The film has a substantially uniform thickness and a surface configured to be adhered to a substrate. At least one open aperture is formed through the film in a location corresponding to that of a contact pad in the substrate upon which the mask is to be disposed. The aperture includes a surface configured to maintain contact with and define a peripheral shape of a conductive structure to be formed on the contact pad.

Busacco does not disclose, expressly or inherently, a solder mask with at least one aperture configured to maintain contact with and define the shape of a conductive structure. As such, Busacco does not anticipate each and every element of claim 43 as would be required to maintain the 35 U.S.C. § 102(b) rejection of that claim.

It is, therefore, respectfully submitted that, under 35 U.S.C. § 102(b), independent claim 43 is directed to subject matter that is allowable over Busacco.

Claims 44-48 are each allowable, among other reasons, for depending directly from claim 43, which is allowable.

Claim 44 is further allowable because the description of Busacco is limited to a overlay 12 with apertures 28 that fit over contact bumps 18 that protrude from a substrate 14. Thus, Busacco does not expressly or inherently describe an aperture positioned to expose a non-peripheral region of the contact pad.

Independent claim 49 is drawn to a semiconductor device assembly including a substrate with at least one contact pad, a pre-formed film of solder mask material with a substantially uniform thickness including a polymer, and at least one aperture formed through the preformed film. The pre-formed film has a uniform thickness and is disposed on the substrate. The at least one aperture is formed through the pre-formed film in a location corresponding to at least one contact pad and is configured to form a peripheral shape of a conductive structure.

Busacco does not disclose, expressly or inherently, a solder mask with at least one aperture configured to form a peripheral shape of a conductive structure on a semiconductor device. As such, Busacco does not anticipate each and every element of claim 43 as would be required to maintain the 35 U.S.C. § 102(b) rejection of that claim.

It is, therefore, respectfully submitted that, under 35 U.S.C. § 102(b), independent claim 49 is directed to subject matter that is allowable over Busacco.

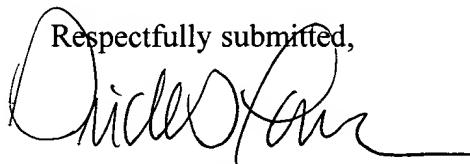
Each of claims 50-56 is allowable, among other reasons, for depending either directly or indirectly from claim 49, which is allowable.

Claim 52 is further allowable as the apertures of Busacco do not expose any part of the contact pads.

It is respectfully requested that the 35 U.S.C. § 102(b) rejections of claims 33-37 and 41-56 be withdrawn, and that each of these claims be allowed.

## CONCLUSION

It is respectfully submitted that each of claims 33-37 and 41-56 is allowable. An early notice of the allowability of each of these claims is respectfully solicited, as is an indication that the above-referenced application has been passed for issuance. If any issues preventing allowance of the above-referenced application remain which might be resolved by way of a telephone conference, the Office is kindly invited to contact the undersigned attorney.

Respectfully submitted,  


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Date: December 21, 2006

Attachment: Replacement Sheets

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Document in ProLaw